

What is claimed:

1. An apparatus for thermally processing large area substrates, comprising:
a chamber;
a plurality of processing zones disposed in the chamber; and
a lift mechanism coupled to the plurality of processing zones and adapted to vertically position the plurality of processing zones within the chamber, wherein each zone further comprises:
an upper heated plate;
a lower heated plate adapted to support a first large area substrate thereon;
an unheated plate adapted to support a second large area substrate thereon, the unheated plate disposed between the upper and lower heated plates.
2. The apparatus of claim 1, wherein the lower heated plate further comprises:
at least one heating element providing a greater heat capacity along a first edge of the lower heated plate relative an adjacent second edge of the lower heated plate.
3. The apparatus of claim 1, wherein the lower heated plate further comprises:
a first heating zone; and
a second heating zone controlled independent from the first heating zone.
4. The apparatus of claim 3, wherein the lower heated plate further comprises:
a first heater disposed in the first heating zone; and
a second heater disposed in the second heating zone.
5. The apparatus of claim 4, wherein the first heater is disposed between a first edge of the lower heated plate and the second heater, and has a greater heating capacity than the second heater.
6. The apparatus of claim 4, wherein the lower heated plate further comprises:
a first plate;

a second plate disposed adjacent to the first plate and forming a substrate supporting surface therewith;

a first heater disposed on the first plate; and

a second heater disposed on the second plate.

7. The apparatus of claim 1, wherein the lower heated plate includes one or more slits formed therethrough.

8. The apparatus of claim 1, wherein the lower heated plate includes:

a plurality of substrate supports extending from the lower heated plate and adapted to support the first substrate in a spaced-apart relation relative to the lower heated plate.

9. The apparatus of claim 1, wherein the plurality of processing zones are vertically stacked.

10. The apparatus of claim 9, wherein the plurality of vertically stacked processing zones further comprises:

a lower heating zone; and

an upper heating zone immediately above the lower heating zone, wherein an upper heated plate of the lower processing zone is a lower heated plate of the upper processing zone.

11. The apparatus of claim 1, wherein the unheated plate is fabricated from glass, ceramic or combinations thereof.

12. The apparatus of claim 1, wherein the unheated plate is at least partially fabricated from aluminum, nickel, steel, stainless steel or combinations thereof.

13. The apparatus of claim 1, wherein the unheated plate further comprises:

a first plate;

a second plate disposed adjacent to the first plate and forming a substrate support surface therewith.

14. The apparatus of claim 1, wherein the unheated plate further comprises:
at least one slot formed through the unheated plate.
15. An apparatus for thermally processing large area substrates, comprising:
a chamber having a substrate transfer window formed therein;
a plurality of vertically stacked heated plates, at least one of the heated plates adapted to support a first large area substrate;
a plurality of unheated plates having at least one unheated plate disposed between each pair of heated plates, at least one of the unheated plates adapted to support a second large area substrate; and
a lift mechanism coupled to the plurality of interleaved heated and unheated plates and adapted to selectively position at least one of the plurality of interleaved plates adjacent the window.
16. The apparatus of claim 15, wherein at least one of the heated plates further comprises:
at least one heating element providing a greater heat capacity along a first edge of the lower heated plate relative an adjacent second edge of the heated plate.
17. The apparatus of claim 15, wherein at least a first heated plate of the plurality of heated plates further comprises:
a first heating zone; and
a second heating zone controlled independently from the first heating zone.
18. The apparatus of claim 17, wherein the first heated plate further comprises:
a first heater disposed in the first heating zone; and
a second heater disposed in the second heating zone.

19. The apparatus of claim 18, wherein the first heater is disposed outward of the second heater and along a first edge of the first heated plate, the first heater having greater heating capacity than the second heater disposed inward of the first heater.
20. The apparatus of claim 16, where the first heated plate is substantially rectangular.
21. The apparatus of claim 18, wherein the first heated plate further comprises:
a first plate member having the first heater disposed thereon; and
a second plate member disposed adjacent the first plate member and having the second heater disposed thereon.
22. The apparatus of claim 15 further comprising:
a vacuum pump coupled to a first port formed through the chamber; and
a gas source coupled to a second port formed through the chamber.
23. The apparatus of claim 15 further comprising:
an insulation layer disposed over the chamber and having a thermal conductivity of less than about 0.035 Watt/(m-degrees Kelvin).
24. An apparatus for thermally processing large area substrates, comprising:
a lower chamber body;
an upper chamber body;
a connecting member coupling the lower and upper chamber bodies and defining a chamber therewith;
a large area substrate storage cassette disposed within the chamber; and
a lift mechanism coupled to the cassette and adapted to vertically position the cassette within the chamber; wherein the cassette further comprises:
a plurality of vertically stacked heated plates adapted to support a first large area substrate; and
a plurality of unheated plates disposed between each pair of heated

plates, at least one of the unheated plates adapted to support a second large area substrate.

25. The apparatus of claim 24, wherein at least one of the heated plates further comprises:

at least one heating element providing a greater heat density along a first edge of the lower heated plate relative an adjacent second edge of the heated plate.

26. The apparatus of claim 24, wherein at least a first heated plate of the plurality of heated plates further comprises:

a first plate member; and

a second plate member forming a substrate support surface with the first plate member.

27. The apparatus of claim 24, wherein at least a first heated plate of the heated plates further comprises:

a first heating zone; and

a second heating zone controlled independently from the first heating zone.

28. The apparatus of claim 24, wherein at least one of a first heated plate of the plurality of heated plates or a first unheated plate of the plurality of unheated plates further comprises:

at least one slit formed therethrough.

29. The apparatus of claim 24, wherein each pair of first heated plates having at least one unheated plate disposed therebetween defines an independently controllable heating zone.